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IS 10663 (2003): Dental Rotary Instruments - Steel and Carbide Burs [MHD 8: Dentistry]

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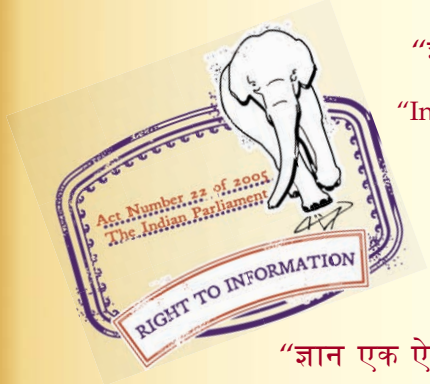

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Bhartṛhari—Nītiśatakam
"Knowledge is such a treasure which cannot be stolen"

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IS 10663 : 2003
ISO 3823-1 : 1997

भारतीय मानक

दांत घूर्णी उपकरण — इस्पात और कार्बाइड बर

(पहला पुनरीक्षण)

Indian Standard

DENTAL ROTARY INSTRUMENTS — STEEL AND CARBIDE BURS

(First Revision)

ICS 11.060.20

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

February 2003

Price Group 11

NATIONAL FOREWORD

This Indian Standard (First Revision) which is identical with ISO 3823-1:1997 'Dental rotary instruments — Burs — Part 1 : Steel and carbide burs' was adopted by the Bureau of Indian Standards on the recommendations of the Dentistry Sectional Committee and approval of the Medical Equipment and Hospital Planning Division Council.

This standard was first published in 1983. Its first revision has been undertaken with a view to align its requirements with ISO 3823-1:1997 and adopt it as a dual number standard.

This standard contains the updated specifications for tungsten carbide burs. The various dimensional and other requirements specified for steel and carbide burs are those considered important to ensure the interchangeability and safe usage of these instruments in the practice of dentistry.

The text of International Standard has been approved as suitable for publication as Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.

b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards which are to be substituted in their place are listed below along with their degree of equivalence for the editions indicated:

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 1797-1:1992	IS 15311 (Part 1):2003 Dental rotary instruments-Shanks : Part 1 Shanks made of metals (*under print*)	Identical
ISO 2157:1992	IS 10307:1983 Dental instruments — Working parts of burs and cutters, dental — Nominal sizes and designations (*first revision*)	do
ISO 8325:1985	IS 13701:1993 Dentistry — Dental rotary instruments — Test methods	do

The Technical Committee responsible for the preparation of this standard has reviewed the provisions of ISO 3696, ISO 6360-1 and ISO 6360-2, referred in this adopted standard and has decided that these are acceptable for use in conjunction with this standard.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS 2:1960 'Rules for rounding off numerical values *(revised)*'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard
DENTAL ROTARY INSTRUMENTS — STEEL AND CARBIDE BURS
(First Revision)

1 Scope

This part of ISO 3823 specifies dimensional and other relevant requirements for the 10 most commonly used shapes of steel and carbide burs, including a quality control for these instruments.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 3823. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 3823 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 1797-1:1992, *Dental rotary instruments — Shanks — Part 1: Shanks made of metals.*

ISO 2157:1992, *Dental rotary instruments — Nominal diameters and designation code number.*

ISO 3696:1987, *Water for analytical laboratory use — Specification and test methods.*

ISO 6360-1:1995, *Dental rotary instruments — Number coding system — Part 1: General characteristics.*

ISO 6360-2:1986, *Dental rotary instruments — Number coding system — Part 2: Shape and specific characteristics.*

ISO 8325:1985, *Dental rotary instruments — Test methods.*

3 Classification

Steel and carbide burs shall be classified, according to the material of the working part, into the following two types:

— Type 1: steel burs

— Type 2: carbide burs

4 Symbols for dimensions

For the purposes of this part of ISO 3823, the following symbols apply.

d_1 diameter of working part, head diameter;

d_2 neck diameter;

l_1 length of working part, head length;

l_2 overall length.

5 Requirements

5.1 Material

5.1.1 Working part

The working part shall be made of steel or tungsten carbide. The selection of the type of material and its treatment shall be left to the discretion of the manufacturer.

5.1.2 Shank

The material of the shank shall comply with ISO 1797-1.

5.2 Shape

The shape of the working part shall be as specified in figures 1 to 22.

Variations of the shape within the limited dimensions and the terms specified in the titles of the respective subclauses are permitted.

Testing shall be carried out in accordance with 6.1.

5.3 Dimensions of working part and number of blades

All dimensions are given in millimetres. The dimensions of the working part shall be as specified in the appropriate figures and tables. The number of blades shall be as specified in the respective tables.

Testing shall be carried out in accordance with 6.1.

5.3.1 Steel burs

5.3.1.1 **Round head** (spherical)

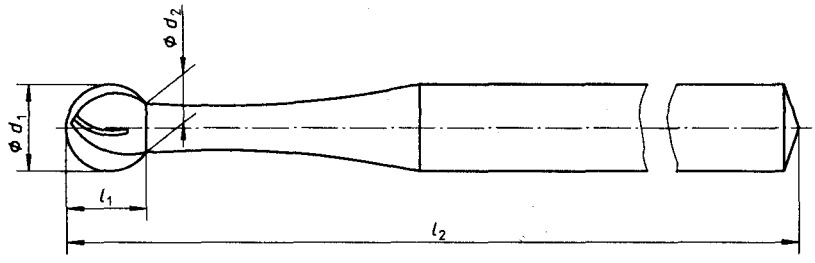


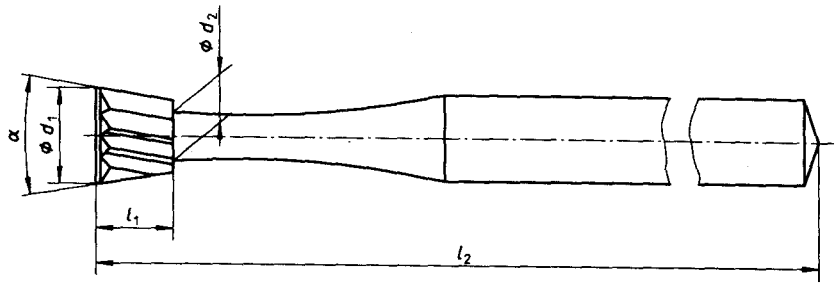
Figure 1

Table 1 — Dimensions and number of blades

Nominal diameter designation	d_1		d_2	l_1	Number of blades	l_2*) ± 0,5			
	nom.	tol.	max.	min.	min.	Shank type 1 Standard	Shank type 2 Standard	Shank type 3 Standard	Shank type 3 Short
006	0,6		0,48	0,46	6				
008	0,8		0,64	0,58	6				
010	1,0		0,78	0,73	6				
012	1,2		0,88	0,90	6				
014	1,4		0,98	1,08	6				
016	1,6		1,04	1,26	6				
018	1,8	± 0,08	1,12	1,46	6				
021	2,1		1,20	1,71	6				
023	2,3		1,28	1,89	6	22,0	44,5	19,0	16,5
025	2,5		1,40	2,05	10				
027	2,7		1,48	2,23	10				
029	2,9		1,60	2,39	10				
031	3,1		1,68	2,53	10				
033	3,3		1,78	2,72	10				
036	3,5		1,82	2,92	10				
037	3,7		1,92	3,09	10				
040	4,0		2,06	3,40	12				
042	4,2	± 0,10	2,16	3,51	12				
045	4,5		2,16	3,80	12				
047	4,7		2,24	3,97	12				
050	5,0		2,32	4,25	12				

*) The shank Type 1, 2 or 3 refers to the respective shanks of ISO 1797-1.
"Standard" refers to instruments with standard fitting lengths of shank. For instruments with shorter or longer lengths of shank, the overall lengths l_2 vary accordingly. See ISO 1797-1, table 1.

5.3.1.2 Inverted cone head (inverted, truncated conical)



Type 1 : α = 10° to 16°
Type 2 : α = 6° to 16°

Figure 2

Table 2 — Dimensions and number of blades

Nominal diameter designation	d_1 ± 0,08	d_2 max.	l_1 min.	Number of blades min.	l_2*) ± 0,5			
					Shank type 1 Standard	Shank type 2 Standard	Shank type 3 Standard	Shank type 3 Short
006	0,6	0,48	0,42	6				
008	0,8	0,64	0,57	6				
010	1,0	0,78	0,71	6				
012	1,2	0,88	0,87	6				
014	1,4	0,98	1,00	6				
016	1,6	1,04	1,24	6				
018	1,8	1,12	1,44	6	22,0	44,5	19,0	16,5
021	2,1	1,20	1,66	6				
023	2,3	1,28	1,84	6				
025	2,5	1,40	2,00	10				
027	2,7	1,48	2,18	10				
029	2,9	1,60	2,33	10				
031	3,1	1,68	2,51	10				

*) See table 1.

5.3.1.3 Pear head, regular and long (hemispherical, inverted conical)

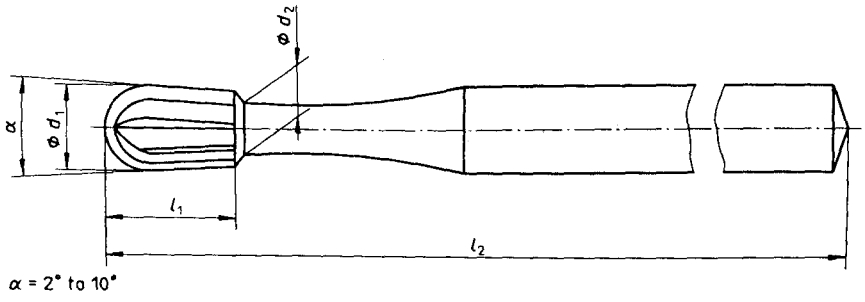


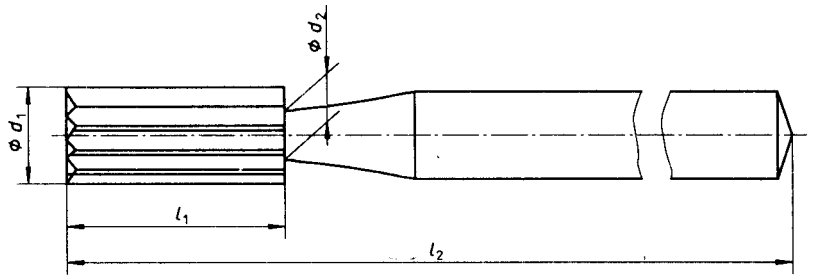
Figure 3

Table 3 — Dimensions and number of blades

Nominal diametre designation	d_1 ± 0,08	d_2 max.	l_1 min. Regular	l_1 min. Long	Number of blades min.	l_2*) ± 0,5 Shank type 1 Standard	l_2*) ± 0,5 Shank type 2 Standard	l_2*) ± 0,5 Shank type 3 Standard	l_2*) ± 0,5 Shank type 3 Short
006	0,6	0,48	0,72	—	6				
008	0,8	0,64	0,97	—	6				
010	1,0	0,78	1,21	3,8	6				
012	1,2	0,88	1,47	3,8	6				
014	1,4	0,98	1,70	4,3	6				
016	1,6	1,04	2,04	4,3	6	22,0	44,5	19,0	16,5
018	1,8	1,12	2,34	4,8	6				
021	2,1	1,20	2,71	—	6				
023	2,3	1,28	2,99	—	6				
025	2,5	1,40	3,25	—	10				
027	2,7	1,48	3,53	—	10				
029	2,9	1,60	3,78	—	10				
031	3,1	1,68	4,06	—	10				

*) See table 1.

5.3.1.4 Straight fissure head (cylindrical)



Taper angle of the head < 2°

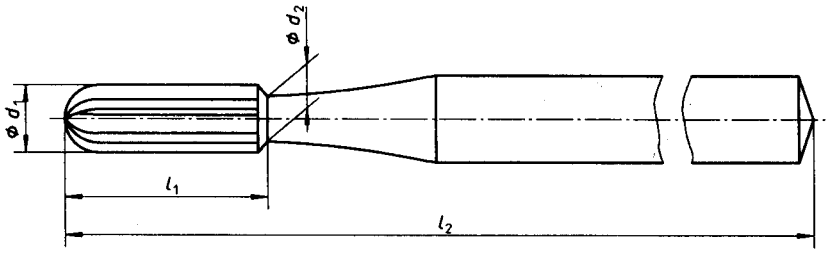
Figure 4

Table 4 — Dimensions and number of blades

Nominal diameter designation	d_1 ± 0,08	d_2 max.	l_1 min.	Number of blades min.	l_2*) Shank type 1 Standard	Shank type 2 Standard	Shank type 3 Standard	Shank type 3 Short
Regular								
006	0,6	0,68	2,8	6	22,0	44,5	19,0	16,5
008	0,8	0,88	3,3	6				
010	1,0	1,08	3,8	6				
012	1,2	1,28	3,8	6				
014	1,4	1,35	4,3	6				
016	1,6	1,50	4,3	6				
018	1,8	1,60	4,8	6				
021	2,1	1,70	4,8	6				
023	2,3	1,80	5,3	6				
025	2,5	1,85	5,3	10				
027	2,7	1,90	6,0	10				
029	2,9	2,00	6,0	10				
031	3,1	2,00	6,6	10				
Miniature								
008	0,8	0,88	3,0	6	22,0	44,5	19,0	16,5
010	1,0	1,08	3,0	6				
012	1,2	1,28	3,0	6				
014	1,4	1,35	3,5	6				
016	1,6	1,50	3,5	6				
018	1,8	1,60	3,5	6				
021	2,1	1,70	4,0	6				
023	2,3	1,80	4,0	6				

*) See table 1.

5.3.1.5 Straight fissure head with rounded end (hemispherical, cylindrical)



Taper angle of the head < 2°

Figure 5

Table 5 — Dimensions and number of blades

Nominal diameter designation	d_1 ± 0,08	d_2 max.	l_1 min.	Number of blades min.	l_2*) ± 0,5			
					Shank type 1 Standard	Shank type 2 Standard	Shank type 3 Standard	Shank type 3 Short
006	0,6	0,68	2,8	6				
008	0,8	0,88	3,3	6				
010	1,0	1,08	3,8	6				
012	1,2	1,28	3,8	6				
014	1,4	1,35	4,3	6				
016	1,6	1,50	4,3	6				
018	1,8	1,60	4,8	6				
021	2,1	1,70	4,8	6	22,0	44,5	19,0	16,5
023	2,3	1,80	5,3	6				
025	2,5	1,85	5,3	10				
027	2,7	1,90	6,0	10				
029	2,9	2,00	6,0	10				
031	3,1	2,00	6,6	10				

*) See table 1.

5.3.1.6 Tapered fissure head (truncated conical)

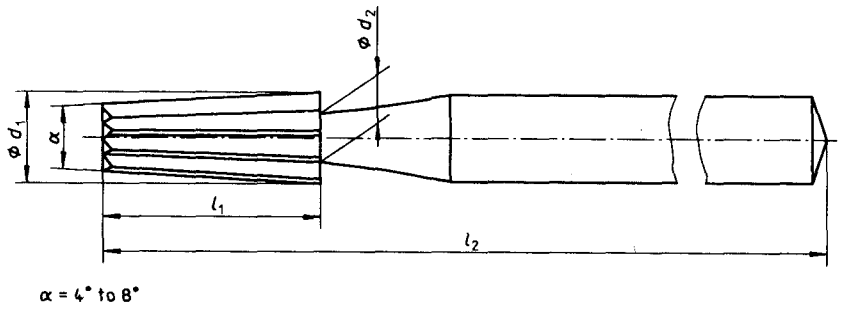


Figure 6

Table 6 — Dimensions and number of blades

Nominal diameter designation	d_1 ± 0,08	d_2 max.	l_1 min.	Number of blades min.	l_2*) ± 0,5			
					Shank type 1 Standard	Shank type 2 Standard	Shank type 3 Standard	Shank type 3 Short
Regular								
006	0,6	0,68	2,8	6	22,0	44,5	19,0	16,5
008	0,8	0,88	3,3	6				
010	1,0	1,08	3,8	6				
012	1,2	1,28	3,8	6				
014	1,4	1,35	4,3	6				
016	1,6	1,50	4,3	6				
018	1,8	1,60	4,8	6				
021	2,1	1,70	4,8	6				
023	2,3	1,80	5,3	6				
025	2,5	1,85	5,3	10				
027	2,7	1,90	6,0	10				
029	2,9	2,00	6,0	10				
031	3,1	2,00	6,6	10				
Miniature								
008	0,8	0,88	3,0	6	22,0	44,5	19,0	16,5
010	1,0	1,08	3,0	6				
012	1,2	1,28	3,0	6				
014	1,4	1,35	3,5	6				
016	1,6	1,50	3,5	6				
018	1,8	1,60	3,5	6				
021	2,1	1,70	4,0	6				
023	2,3	1,80	4,0	6				

*) See table 1.

5.3.1.7 Tapered fissure head with rounded end, regular and long (truncated conical, domed)

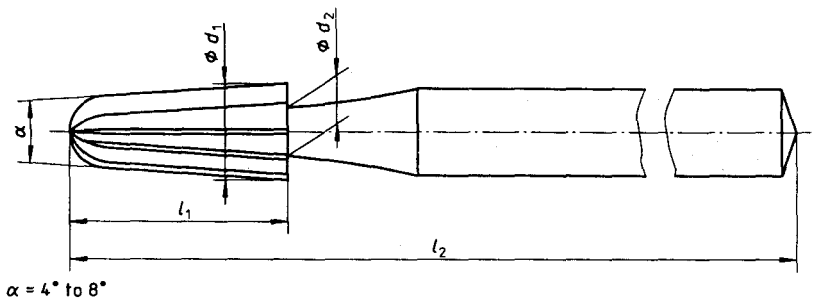


Figure 7

Table 7 — Dimensions and number of blades

Nominal diameter designation	d_1 ± 0,08	d_2 max.	l_1 min.	Number of blades min.	l_2*) ± 0,5			
					Shank type 1 Standard	Shank type 2 Standard	Shank type 3 Standard	Shank type 3 Short
006	0,6	0,68	2,8	6				
008	0,8	0,88	3,3	6				
010	1,0	1,08	3,8	6				
012	1,2	1,28	3,8	6				
014	1,4	1,35	4,3	6				
016	1,6	1,50	4,3	6				
018	1,8	1,60	4,8	6	22,0	44,5	19,0	16,5
021	2,1	1,70	4,8	6				
023	2,3	1,80	5,3	6				
025	2,5	1,85	5,3	10				
027	2,7	1,90	6,0	10				
029	2,9	2,00	6,0	10				
031	3,1	2,00	6,6	10				

*) See table 1.

5.3.1.8 Wheel head (wheel)

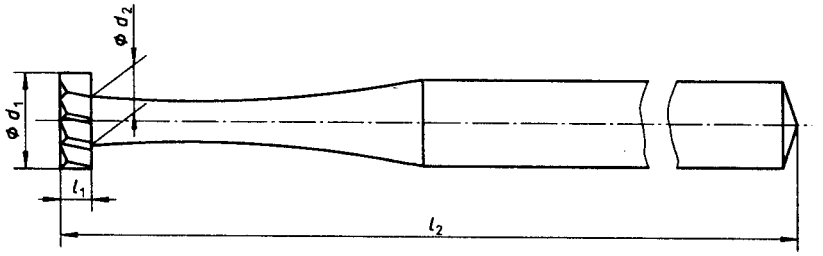


Figure 8

Table 8 — Dimensions and number of blades

Nominal diameter designation	d_1 ± 0,08	d_2 max.	l_1 min.	Number of blades min.	l_2*) ± 0,5			
					Shank type 1 Standard	Shank type 2 Standard	Shank type 3 Standard	Shank type 3 Short
006	0,6	0,48	0,19	6				
008	0,8	0,64	0,23	6				
010	1,0	0,78	0,26	6				
012	1,2	0,88	0,29	6				
014	1,4	0,98	0,32	6				
016	1,6	1,04	0,36	6				
018	1,8	1,12	0,42	6	22,0	44,5	19,0	16,5
021	2,1	1,20	0,48	6				
023	2,3	1,28	0,52	6				
025	2,5	1,40	0,57	10				
027	2,7	1,48	0,62	10				
029	2,9	1,60	0,66	10				
031	3,1	1,68	0,70	10				

*) See table 1.

5.3.2 Carbide burs

5.3.2.1 **Round head** (spherical)

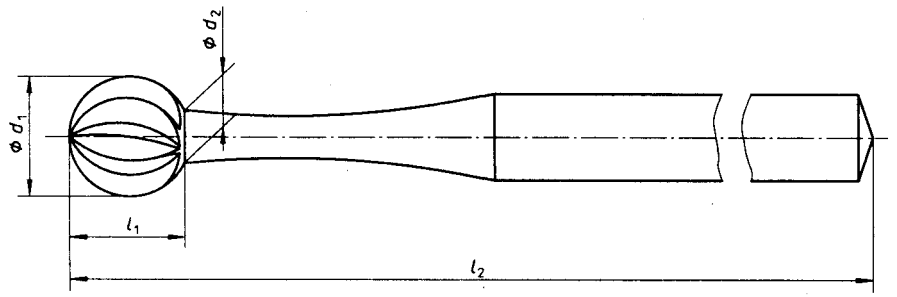


Figure 9

Table 9 — Dimensions and number of blades

Nominal diameter designation		d_1		d_2	l_1	Number of blades	l_2*) ± 0,5			
Preferred diameter		nom.	tol.	max.	min.	min.	Shank type 1 Standard	Shank type 2 Standard	Shank type 3 Standard	Shank type 3 Short
005	—	0,5	± 0,05	0,41	0,30	6	22,0	44,5	19,0	16,5
006	—	0,6		0,48	0,40					
007	—	0,7		0,55	0,45					
008	—	0,8		0,64	0,50					
009	—	0,9		0,70	0,60					
010	—	1,0	± 0,08	0,78	0,65					
012	—	1,2		0,88	0,79					
014	—	1,4		0,98	0,82					
016	—	1,6		1,04	1,02					
018	—	1,8		1,20	1,26					
021	—	2,1		1,35	1,43	8				
023	—	2,3		1,45	1,60					
—	025	2,5		1,50	1,78	10				
—	027	2,7		1,55	1,85	8				
—	031	3,1		1,68	2,44	10				

*) See table 1.

5.3.2.2 Inverted cone head (inverted, truncated conical)

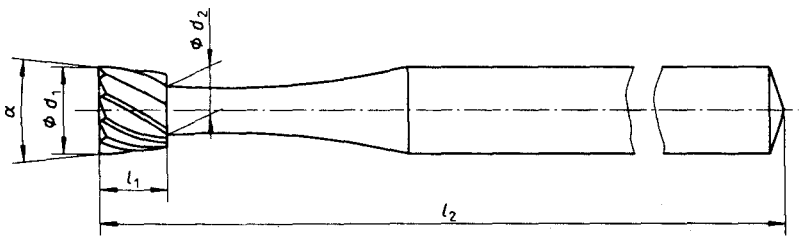


Figure 10

Table 10 — Dimensions and number of blades

Nominal diameter designation		d_1		d_2	α	l_1	Number of blades	l_2*) ± 0,5			
Preferred diameter		nom.	tol.	max.		min.	min.	Shank type 1 Standard	Shank type 2 Standard	Shank type 3 Standard	Shank type 3 Short
006	—	0,6	±0,05	0,48	6° to 16°	0,34	6	22,0	44,5	19,0	16,5
008	—	0,8		0,64		0,45					
010	—	1,0	±0,08	0,78		0,60					
012	—	1,2		0,88		0,70					
014	—	1,4		0,98		0,80					
016	—	1,6		1,05		1,10					
018	—	1,8		1,20		1,30					
—	021	2,1		1,35		1,54					
—	023	2,3		1,45		1,65					

*) See table 1.

5.3.2.3 Pear head (hemispherical, inverted conical)

5.3.2.3.1 Head length regular

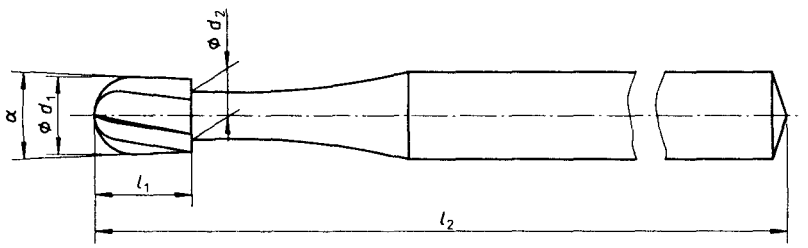


Figure 11

Table 11 — Dimensions and number of blades

Nominal diameter designation		d_1		d_2	α	l_1	Number of blades	l_2*) ± 0,5			
Preferred diameter		nom.	tol.	max.		min.	min.	Shank type 1 Standard	Shank type 2 Standard	Shank type 3 Standard	Shank type 3 Short
006	—	0,6	± 0,05	0,48	2° to 10°	0,6	6	22,0	44,5	19,0	16,5
008	—	0,8		0,64		0,9					
009	—	0,9		0,70		1,0					
010	—	1,0	± 0,08	0,78		1,1					
012	—	1,2		0,88		1,3					
014	—	1,4		0,98		1,5					
—	016	1,6		1,04		1,8					
—	018	1,8		1,12		2,1					
—	021	2,1		1,20		2,4					

*) See table 1.

5.3.2.3.2 Head length long

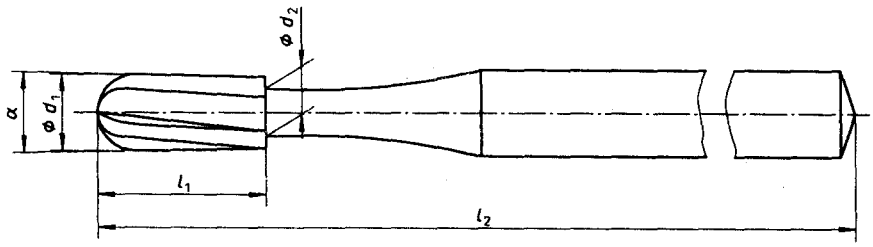


Figure 12

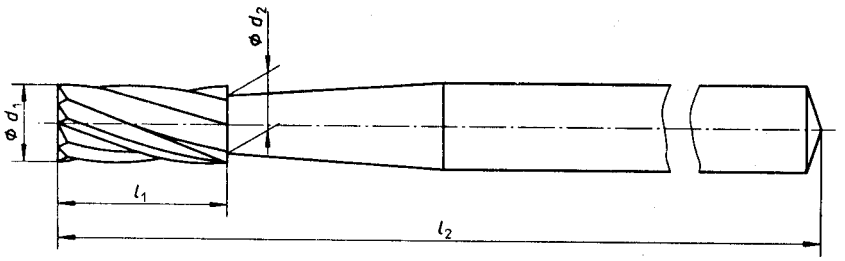
Table 12 — Dimensions and number of blades

Nominal diameter designation		d_1		d_2	α	l_1	Number of blades	l_2*) ± 0,5			
Preferred diameter		nom.	tol.	max.		min.	min.	Shank type 1 Standard	Shank type 2 Standard	Shank type 3 Standard	Shank type 3 Short
—	008	0,8	± 0,05	0,64	2° to 10°	1,4	6	22,0	44,5	19,0	16,5
010	—	1,0	± 0,08	0,78		3,7					
012	—	1,2		0,88							
014	—	1,4		0,98		4,0					
—	016	1,6		1,04							
—	018	1,8		1,12		4,5					

*) See table 1.

5.3.2.4 Straight fissure head (cylindrical)

5.3.2.4.1 Head length regular



Taper angle of the head ≤ 2°

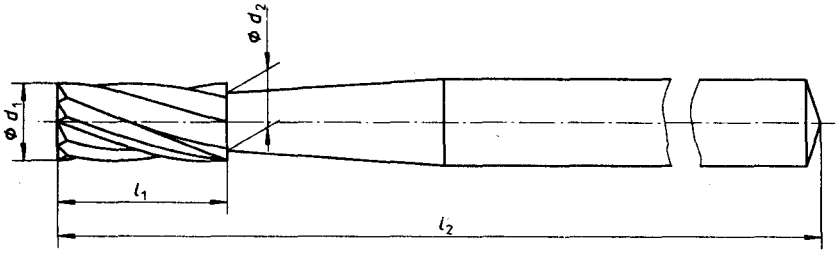
Figure 13

Table 13 — Dimensions and number of blades

Nominal diameter designation		d_1		d_2	l_1	Number of blades	l_2*) ± 0,5			
Preferred diameter		nom.	tol.	max.	min.	min.	Shank type 1 Standard	Shank type 2 Standard	Shank type 3 Standard	Shank type 3 Short
008	—	0,8	± 0,05	0,80	3,2	6	22,0	44,5	19,0	16,5
—	009	0,9		0,90						
010	—	1,0	± 0,08	1,00	3,7					
012	—	1,2		1,20						
014	—	1,4		1,35	4,0					
016	—	1,6		1,50						
018	—	1,8		1,60	4,5					
—	021	2,1		1,80						

*) See table 1.

5.3.2.4.2 Head length miniature



Taper angle of the head ≤ 2°

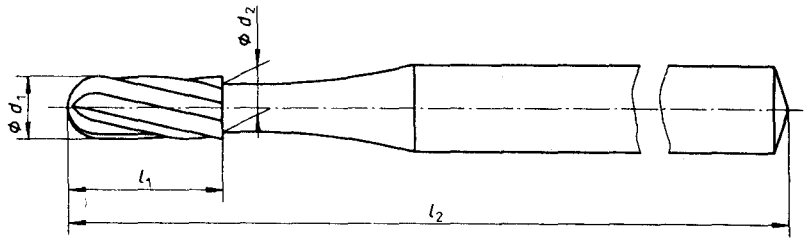
Figure 14

Table 14 — Dimensions and number of blades

Nominal diameter designation		d_1		d_2	l_1	Number of blades	l_2*) ± 0,5			
Preferred diameter		nom.	tol.	max.	min.	min.	Shank type 1 Standard	Shank type 2 Standard	Shank type 3 Standard	Shank type 3 Short
—	008	0,8	± 0,05	0,80	2,9	6	22,0	44,5	19,0	16,5
—	010	1,0		1,00						
—	012	1,2	± 0,08	1,20						
—	016	1,4		1,35	3,3					
—	018	1,6		1,50						
—	021	1,8		1,60						
—	021	2,1		1,80	3,7					
—	023	2,3		1,85						

*) See table 1.

5.3.2.5 Straight fissure head with rounded end (hemispherical, cylindrical)



Taper angle of the head ≤ 2°

Figure 15

Table 15 — Dimensions and number of blades

Nominal diameter designation		d_1		d_2	l_1	Number of blades	l_2*) ± 0,5			
Preferred diameter		nom.	tol.	max.	min.	min.	Shank type 1 Standard	Shank type 2 Standard	Shank type 3 Standard	Shank type 3 Short
—	008	0,8	± 0,05	0,80	3,2	6	22,0	44,5	19,0	16,5
—	009	0,9		0,90						
010	—	1,0	± 0,08	1,00	3,7					
012	—	1,2		1,20						
014	—	1,4		1,35	4,0					
—	016	1,6		1,50						
—	018	1,8		1,60	4,5					
	021	2,1		1,80						

*) See table 1.

5.3.2.6 Tapered fissure head (truncated conical)

5.3.2.6.1 Head length regular

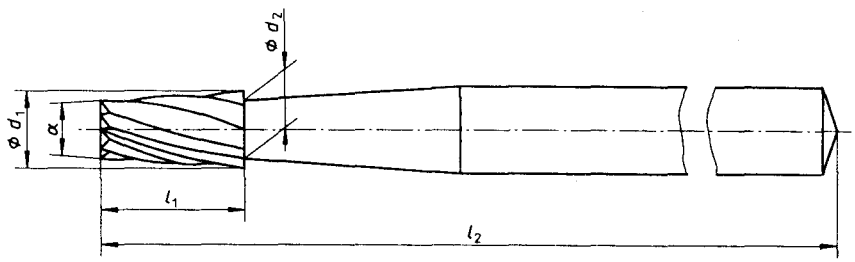


Figure 16

Table 16 — Dimensions and number of blades

Nominal diameter designation		d_1		d_2	α	l_1	Number of blades	l_2*) ± 0,5			
Preferred diameter		nom.	tol.	max.		min.	min.	Shank type 1 Standard	Shank type 2 Standard	Shank type 3 Standard	Shank type 3 Short
008	—	0,8	±0,05	0,80	4° to 8°	3,2	6	22,0	44,5	19,0	16,5
—	009	0,9		0,90							
010	—	1,0	±0,08	1,00		3,7					
012	—	1,2		1,20							
014	—	1,4		1,35		4,0					
016	—	1,6		1,50							
018	—	1,8		1,60		4,5					
—	021	2,1		1,80							

*) See table 1.

5.3.2.6.2 Head length miniature

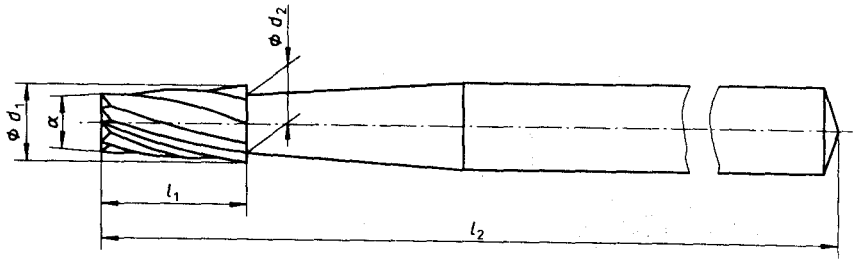


Figure 17

Table 17 — Dimensions and number of blades

Nominal diameter designation		d_1		d_2	α	l_1	Number of blades	l_2*) ± 0,5			
Preferred diameter		nom.	tol.	max.		min.	min.	Shank type 1 Standard	Shank type 2 Standard	Shank type 3 Standard	Shank type 3 Short
—	008	0,8	±0,05	0,80	4° to 8°	2,9	6	22,0	44,5	19,0	16,5
—	010	1,0	±0,08	1,00							
—	012	1,2		1,20							
—	014	1,4		1,35		3,3					
—	016	1,6		1,50							
—	018	1,8		1,50							
	021	2,1		1,80		3.7					
—	023	2,3		1,85							

*) See table 1.

5.3.2.7 Tapered fissure head with rounded end (truncated conical, domed)

5.3.2.7.1 Head length regular

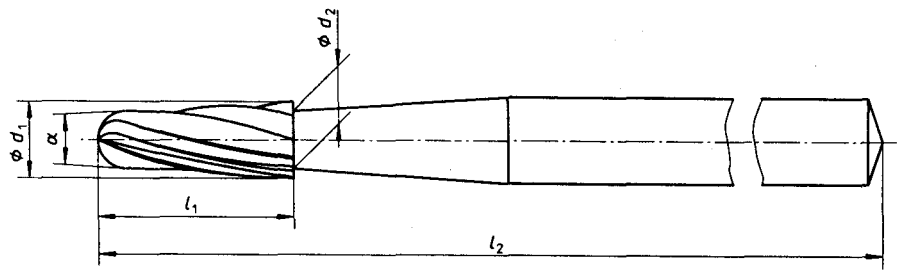


Figure 18

Table 18 — Dimensions and number of blades

Nominal diameter designation		d_1		d_2	α	l_1	Number of blades	l_2*) ± 0,5			
Preferred diameter		nom.	tol.	max.		min.	min.	Shank type 1 Standard	Shank type 2 Standard	Shank type 3 Standard	Shank type 3 Short
—	008	0,8	±0.05	0,80	4° to 8°	3,2	6	22,0	44,5	19,0	16,5
—	009	0,9		0,90							
010	—	1,0	±0,08	1,00		3,7					
012	—	1,2		1,20							
014	—	1,4		1,35		4,0					
016	—	1,6		1,50							
—	018	1,8		1,60		4,5					
—	021	2,1		1,80							

*) See table 1.

5.3.2.7.2 **Head length long**

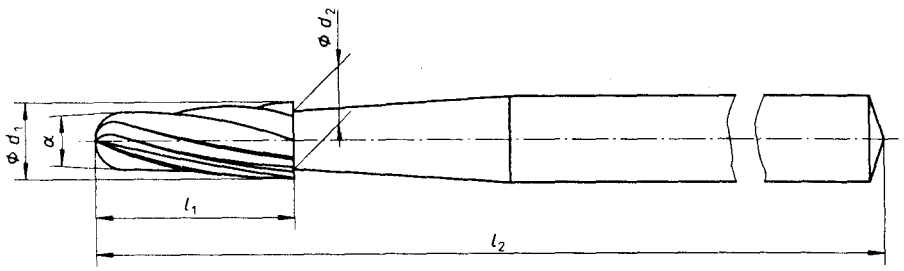


Figure 19

Table 19 — Dimensions and number of blades

Nominal diameter designation		d_1	d_2	α	l_1	Number of blades	l_2*) ± 0,5			
Preferred diameter		± 0,08	max.		min.	min.	Shank type 1 Standard	Shank type 2 Standard	Shank type 3 Standard	Shank type 3 Short
—	010	1,0	1,00	4° to 8°	3,7	6	22,0	44,5	19,0	16,5
—	012	1,2	1,20							

*) See table 1.

5.3.2.8 Wheel head (wheel)

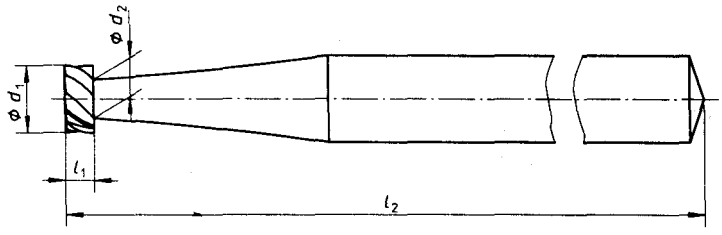


Figure 20

Table 20 — Dimensions and number of biades

Nominal diameter designation		d_1	d_2	l_1	Number of blades	l_2*) ± 0,5			
Preferred diam-eter		± 0,08	max.	min.	min.	Shank type 1 Standard	Shank type 2 Standard	Shank type 3 Standard	Shank type 3 Short
—	012	1,2	0,88	0,21	6	22,0	44,5	19,0	16,5
*) See table 1.									

5.3.2.9 Cylindrical with cross-cut

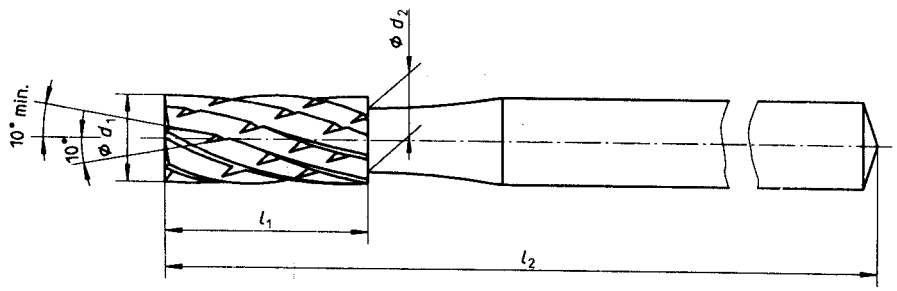


Figure 21

Table 21 — Dimensions and number of blades

Nominal diameter designation		d_1	d_2	l_1	Number of blades[1]	l_2*) ± 0,5			
Preferred diameter		± 0,08	max.	min.	min.	Shank type 1 Standard	Shank type 2 Standard	Shank type 3 Standard	Shank type 3 Short
010	—	1,0	1,00	3,7	6	22,0	44,5	19,0	16,5
012	—	1,2	1,20						
—	014	1,4	1,35	4,0					
—	016	1,6	1,50						
—	018	1,8	1,60	4,5					
—	021	2,1	1,80						
—	023	2,3	1,85						

1) Spiral left and right each.

*) See table 1.

5.3.2.10 Tapered with cross-cut

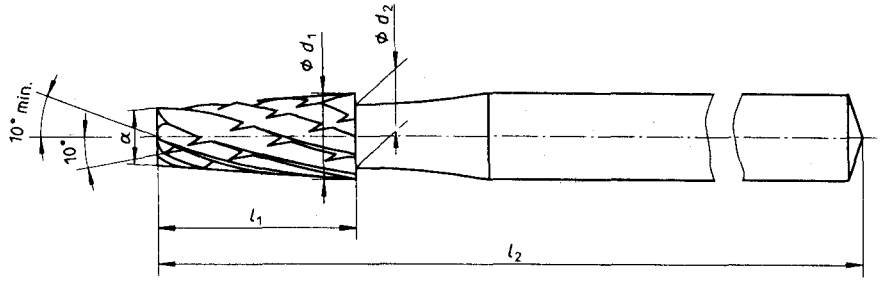


Figure 22

Table 22 — Dimensions and number of blades

Nominal diameter designation		d_1	d_2	α	l_1	Number of blades[1]	l_2*) ± 0,5			
Preferred diameter		± 0,08	max.		min.	min.	Shank type 1 Standard	Shank type 2 Standard	Shank type 3 Standard	Shank type 3 Short
—	010	1,0	1,00	4° to 8°	3,7	6	22,0	44,5	19,0	16,5
012	—	1,2	1,20							
—	014	1,4	1,35		4,0					
—	016	1,6	1,50							
—	018	1,8	1,60							
—	021	2,1	1,70		4,5					
—	023	2,3	1,85							

1) Spiral left and right each.
*) See table 1.

5.4 Dimensions of shank

The shank shall be Type 1, 2 or 3 of ISO 1797-1.

5.5 Run-out

The total indicated run-out shall not exceed the following values:

— for steel burs: 0,08 mm;

— for carbide burs: 0,05 mm.

Testing shall be carried out in accordance with 6.2.

5.6 Corrosion resistance

Steel and carbide burs, if declared corrosion-resistant (or any similar term), shall not show signs of corrosion or functional deterioration after testing. For carbide burs, a slight galvanic corrosion is permitted at the junction of the neck to the carbide working part.

Testing shall be carried out in accordance with 6.3.

5.7 Neck strength

The instrument shall not fracture or take a permanent set exceeding:

— for steel burs: 0,08 mm;

— for carbide burs: 0,05 mm.

Testing shall be carried out after the corrosion test and in accordance with 6.4.

6 Test procedure

6.1 Shapes, dimensions and number of blades

Measure and/or determine the shapes and the dimensions in accordance with ISO 8325:1985, 3.1 to 3.5 respectively, as appropriate.

Determine the number of blades by visual inspection.

6.2 Run-out

Determine the run-out in accordance with ISO 8325:1985, 3.6.

The measurement point shall be the largest diameter just behind the working part.

6.3 Corrosion resistance

6.3.1 Equipment

Autoclave, operating in the non-vacuum mode, capable of being operated at 134 °C to 138 °C and 0,22 $MN \cdot m^{-2}$ (2,2 bar).

6.3.2 Reagent

Distilled or deionized water, grade 3 in accordance with ISO 3696.

6.3.3 Preparation of test piece

Scrub the test piece using soap and warm water. Rinse thoroughly in water (6.3.2) and dry.

6.3.4 Procedure

Place the unwrapped test piece in the autoclave. Using the water (6.3.2) subject the test piece to an autoclaving cycle of $(3^{+0,5}_{0})$ min at 134 °C to 138 °C and 0,22 $MN \cdot m^{-2}$. After the cycle, open the door. Remove the test piece and allow to cool to room temperature.

6.3.5 Evaluation

Visually inspect the test piece at normal visual acuity for any signs of corrosion.

Functional deterioration is determined after testing the neck strength, see 6.4.

6.4 Neck strength

Determine the neck strength in accordance with ISO 8325:1985, 3.7 and after the test for corrosion resistance.

For the test load *F*, use the appropriate value specified in tables 23 to 40. These tables cover the values for the most commonly used sizes of bur. The appropriate test load *F* for other sizes may be calculated using the equation given in ISO 8325.

6.4.1 Test loads *F* for steel burs

Table 23 — Round head

Values in newtons

Nominal diameter	*F*
006	7,36
008	13,24
010	19,12
012	23,35
014	28,84
016	30,12
018	32,96
021	35,90
023	39,73

Table 24 — Inverted cone head

Values in newtons

Nominal diameter	*F*
006	7,65
008	13,64
010	19,52
012	24,03
014	29,04
016	29,53
018	32,67
021	35,02

Table 25 — Pear head

Values in newtons

Nominal diameter	F	
	Regular head	Long head
006	6,37	—
008	10,88	9,02
010	16,08	8,43
012	19,71	11,47
014	23,74	14,22
016	24,81	16,28
018	27,36	18,54
021	29,72	—

Table 26 — Straight fissure head

Values in newtons

Nominal diameter	F	
	Regular head	Miniature head
008	10,39	11,08
010	17,16	20,01
012	27,76	31,98
014	31,68	39,82
016	45,91	51,69
018	52,67	62,19
021	57,97	64,25
023	—	73,28

Table 27 — Straight fissure head with rounded end

Values in newtons

Nominal diameter	F
008	10,39
010	17,16
012	27,76
014	35,21
016	45,91
018	52,67
021	57,97

Table 28 — Tapered fissure head

Values in newtons

Nominal diameter	*F*	
	Regular head	Miniature head
008	10,39	11,08
010	17,16	20,01
012	27,76	31,98
014	36,21	39,82
016	45,91	51,69
018	52,67	62,19
021	57,97	64,25
023	—	73,28

Table 29 — Tapered fissure head with rounded end

Values in newtons

Nominal diameter	*F*	
	Regular head	Long head
008	10,39	—
010	17,16	14,12
012	27,76	23,15
014	35,21	—
016	45,91	—
018	52,67	—
021	57,97	—

Table 30 — Wheel head

Values in newtons

Nominal diameter	*F*
012	29,13

6.4.2 Test loads *F* for carbide burs

Table 31 — Round head, spherical

Values in newtons

Nominal diameter	*F*
005	5,23
006	7,33
007	9,60
008	13,26
009	15,30
010	19,16
012	23,29
014	28,85
016	30,15
018	39,79
021	49,46
023	55,90
025	57,28
027	59,89
031	64,43

Table 32 — Inverted cone head

Values in newtons

Nominal diameter	*F*
006	7,64
008	13,61
010	19,56
012	24,05
014	29,04
016	30,28
018	39,42
021	48,37
023	55,38

Table 33 — Pear head

Values in newtons

Nominal diameter	*F*	
	Regular head	Long head
006	6,46	—
008	10,99	9,06
009	12,94	—
010	16,16	8,50
012	19,78	12,33
014	23,80	22,78
016	24,85	34,73
018	27,45	46,54
021	29,74	—

Table 34 — Straight fissure head (cylindrical)

Values in newtons

Nominal diameter	*F*	
	Regular head	Miniature head
008	10,46	11,16
009	14,30	—
010	17,21	20,02
012	27,79	31,98
014	35,24	39,89
016	45,98	51,73
018	50,86	59,97
021	68,11	75,28
023	—	79,13

Table 35 — Straight fissure head with rounded end (hemispherical, cylindrical)

Values in newtons

Nominal diameter	*F*
008	10,46
009	14,30
010	17,21
012	27,79
014	35,24
016	45,98
018	50,86
021	68,11

Table 36 — Tapered fissure head (truncated conical)

Values in newtons

Nominal diameter	*F*	
	Regular head	Miniature head
008	10,46	11,16
009	14,30	—
010	17,21	20,02
012	27,79	31,98
014	35,24	39,89
016	45,98	51,73
018	50,86	59,97
021	68,11	75,28
023	—	79,13

Table 37 — Tapered fissure head with rounded end (truncated conical, domed)

Values in newtons

Nominal diameter	*F*	
	Regular head	Long head
008	10,46	—
009	14,30	—
010	17,21	14,22
012	27,79	23,22
014	35,24	—
016	45,98	—
018	50,86	—
021	68,11	—

Table 38 — Wheel head (wheel)

Values in newtons

Nominal diameter	*F*
012	29,19

Table 39 — Cylindrical with cross-cut

Values in newtons

Nominal diameter	*F*
010	17,21
012	27,79
014	35,24
016	45,98
018	50,86
021	68,11
023	71,81

Table 40 — Tapered with cross-cut

Values in newtons

Nominal diameter	*F*
010	17,21
012	27,79
014	35,24
016	45,98
018	50,86
021	68,11
023	71,81

7 Quality control

7.1 Sampling

Use a sample size of between 100 and 150 burs, containing at least 20 burs of each of a minimum of five different bur sizes. All three types of shank shall be included. Check 20 burs for each possible defect. The sample group is considered acceptable if no more than three of the 20 burs are rejected. If four or more burs fail the requirements for any given possible defect, the batch from which the samples were drawn does not comply with the specified requirement.

7.2 Acceptable quality level (AQL)

The acceptable quality level, expressed as the maximum acceptable number of defects per 100 pieces, shall be 6,5 max.

The defects are as follows:

a) total indicated run-out exceeds the values specified;

b) head diameter does not conform to the diameter specified;

c) neck diameter exceeds the maximum value specified;

d) any combination of neck breakage, joint breakage or neck taking a permanent set at loads less than those specified;

e) head length is below the minimum value specified;

f) overall length does not conform to that specified.

8 Labelling

Labelling on the package of burs shall contain at least the following information:

a) name and/or trademark of the manufacturer or distributor;

b) material of the working part;

c) type of shank, in accordance with ISO 1797;

d) shape number;

e) execution;

f) size;

g) lot number;

h) the word, or symbol for "sterile", if applicable.

The information shall be given in accordance with ISO 6360, if applicable.

9 Packaging

Steel and carbide burs shall be packaged at the discretion of the manufacturer.

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